LA-UR-20-28527
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Title: The British Mission at Los Alamos

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Intended for: Historical talk for use as-needed

Issued: 2020-10-22

The British Mission at Los Alamos

PowerPoint presentation by historian Alan Carr. The talk discusses the history of the British Mission to Los Alamos during World War II and its legacy.


# NATIONAL SECURITY RESEARCH CENTER

# The British Mission at Los Alamos

Los Alamos NATIONAL LABORATORY EST. 1943

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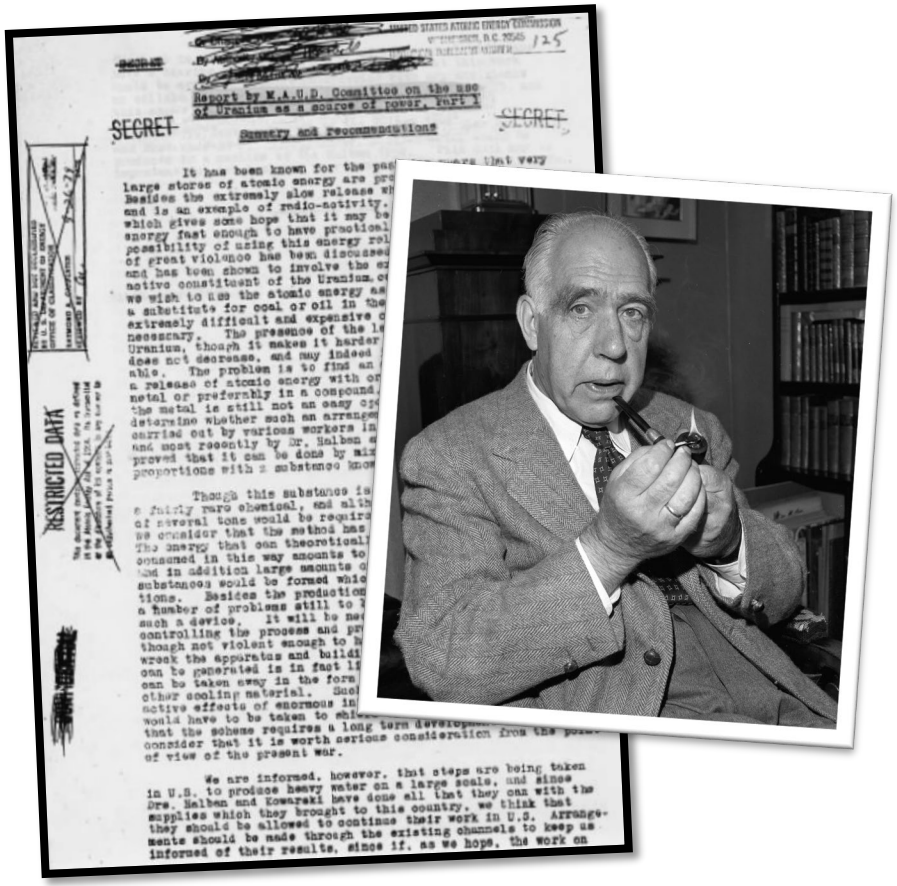
Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA

# The Frisch-Peierls Memo

- Fission was first produced in Nazi Germany in 1938
- Einstein warned FDR in a letter dated August 2, 1939, *but…*
- Germany invaded Poland on September 1, 1939
- In spring 1940, the Frisch-Peierls Memo was completed
- The Battle of Britain began in July 1940


*The attached detailed report concerns the possibility of constructing a 'super-bomb' which utilises the energy stored in atomic nuclei as a source of energy. The energy liberated in the explosion of such a super-bomb is about the same as that produced by the explosion of 1,000 tons of dynamite.*

# Maud Ray Kent??




- The British government sponsored a feasibility study
- In spring 1940 the Maud Committee was created
- The “MAUD” Committee?
- On June 22, 1941 the German Army invaded the Soviet Union
- The committee completed its report in July 1941

***...the material for the first bomb could be ready by the end of 1943.***

# The Quebec Agreement

- The Maud report and Pearl Harbor spurred the US project
- British politicians favored independent projects
- The British project fell behind its U.S. counterpart in 1942
- With the lead, the US stopped sharing information (Sorry!)
- Britain next tried to salvage the role of junior partner
- Churchill personally negotiated a deal in July 1943
- The Quebec Agreement was signed August 19, 1943

*In the field of scientific research and development there shall be full and effective interchange of information and ideas…*

# The British Arrive in America

- The British began arriving in America immediately
- Some Brits worked on gaseous diffusion
- Others worked on electro-magnetic separation
- The largest group came to Los Alamos
- Nobel Laureate Sir James Chadwick lead the group
- Peierls soon led back at Los Alamos
- Chadwick remained in D.C.

*...I cannot escape the feeling that without active and continuing British interest there probably would have been no atomic bomb to drop on Hiroshima.*

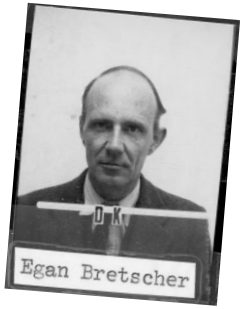
# A Motley Crew

**British Subjects**

James Chadwick
Anthony French
James Hughes
Derrik Littler
Carson Mark (Canada)
William Marley
Donald Marshall
Philip Moon
William Penney
Michael Poole
Harold Sheard
Tony Skyrme
Geoffrey Taylor
Ernest Titterton
James Tuck

**Foreign-Born**

Aage Bohr, consultant (Denmark)
Niels Bohr, consultant (Denmark)
Egon Bretscher (Switzerland)
Boris Davison (Russia)
Otto Frisch (Austria)
Klaus Fuchs (Germany)
Rudolf Peierls (Germany)
George Placzek (Czechoslovakia)
Joseph Rotblat (Poland)

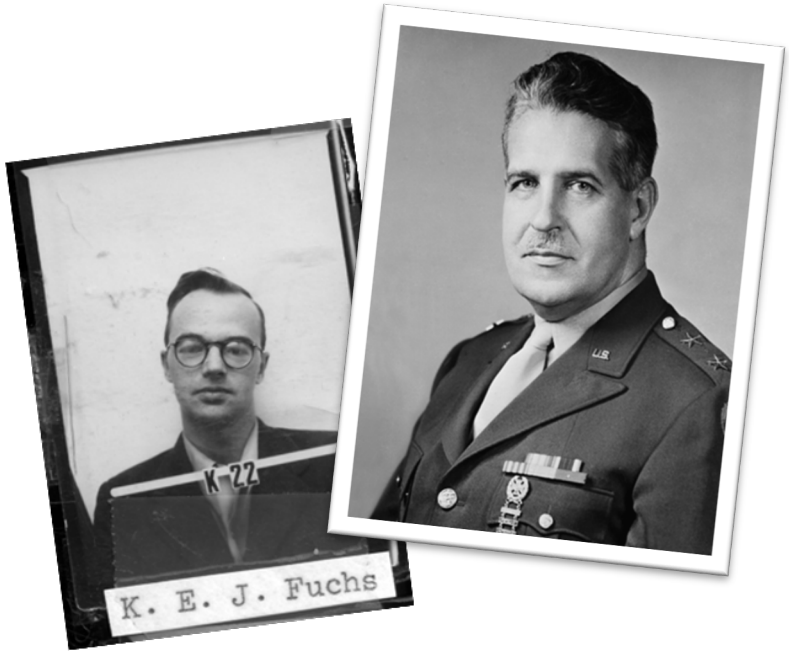






# Klaus Emil Julius Fuchs

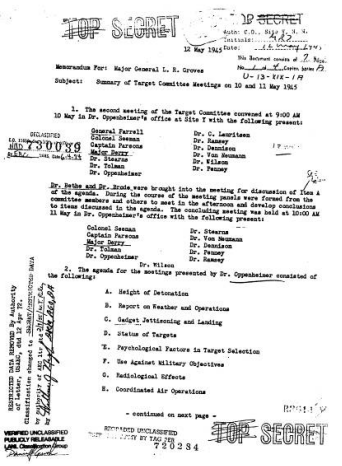
- Fuchs was a German-born member of the Communist Party
- He fled Germany in 1933 shortly after Hitler was appointed chancellor
- He completed his Ph.D. at the University of Bristol in 1937
- In 1942, Fuchs was granted British citizenship
- Peierls recruited him to work on the bomb project: Fuchs repaid his mentor by stealing information!
- Fuchs also stole classified information from the Manhattan Project




*The United Kingdom not only failed us, but herself as well.*

# Notable Technical Contributions

- Peierls, Frisch, Bretscher and Placzek all served as group leaders
- Peierls and Fuchs played critical roles in the Hydrodynamics Group
- Titterton designed many of the electronic control and diagnostic systems for the implosion program
- Tuck was instrumental in developing the implosion lens system
- Taylor predicted phenomena associated with the Trinity test
- Penney measured the blast and served on the Target Committee

# The End of World War II

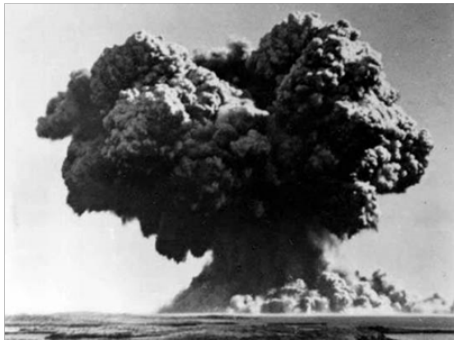
- The atomic strikes were launched from Tinian
- The Quebec Agreement called for the U.K. and U.S. to jointly agree to use atomic weapons
- Although Churchill concurred, it appears there was almost no serious discussion
- Hiroshima was attacked on August 6, 1945
- By November 1945, 64,500 had died
- On August 8, the Soviet Union declared war on Japan and invaded Manchuria soon after
- Nagasaki was bombed on August 9
- By November 1945, 39,214 had died
- An armistice was declared August 14

# A Celebration!

- A few weeks after the armistice the British threw a party
- The British wives took the lead in organizing the event
- Soup, steak and kidney pie, and trifle were served…
- …as well as whiskey, brandy, and port wine
- Tuck wrote a play satirizing security regulations, housing and the Trinity test

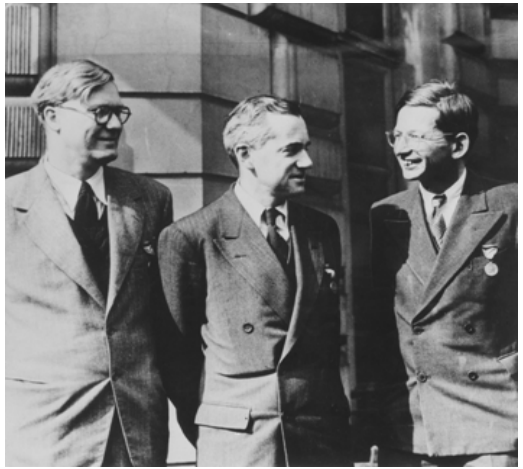
# A New World with New Challenges

- Several British scientists called for international control
- The Atomic Energy Act of 1946 prohibited the exchange of atomic information (Sorry again!)
- On August 29, 1949 the Soviets tested Joe-1
- In early 1950 Fuchs was arrested in Britain for espionage
- A few months later, Julius and Ethel Rosenberg were arrested
- In October 1952, the U.K. tested its first nuclear bomb

# The Legacy of the British Mission

- General Groves: "On the whole, the contribution of the British was helpful but not vital."
- The British made important technical and social contributions
- Wartime cooperation foreshadowed the Mutual Defense Agreement
- Under the auspices of the MDA, the U.K. and U.S. have conducted dozens of full-scale and subcritical nuclear tests




# Epilogue

- Mark became a U.S. citizen and served as T Division leader for 25 years
- Tuck become a U.S. citizen and spent the remainder of his career at Los Alamos
- Fuchs was released after serving nine years in prison and immigrated to East Germany
- Penney became the “British Oppenheimer” and was knighted
- Rotblat left the project early and later won the Nobel Peace Prize
- Peierls was knighted in 1968

# Further Reading

- John Baylis, Anglo-American Defense Relations, 1939-1984
- Margaret Gowing, Britain and Atomic Energy, 1939-1945
- Lillian Hoddeson, et al., Critical Assembly: A Technical History of Los Alamos during the Oppenheimer Years, 1943-1945
- Jenifer Mackby and Paul Cornish, eds, U.S.-UK Nuclear Cooperation After 50 Years
- Ferenc Szasz, British Scientists and the Manhattan Project


*And coming soon from your NSRC!*

# *Trinity and the British Mission*

A David Tietmeyer Film